Lean Flow Enterprise Elements

"Lean Flow" describes the performance of organizations that are effective enough to win consistently in the competitive global marketplace. To understand how to get there, it's useful to focus on Lean (vs. Flow) since it's the "Lean-ness" of a process that achieves the smooth Flow results, with no interruptions or costly pools of work-in-process along the way. But keeping a Flow vision in sight is also useful since it helps everyone work toward operations that are smoother, more efficient, and more effective.

The Lean Flow Enterprise Elements include the items in the four sections (A – D) below. They are generally applied in that sequence during process development projects (ref. Business Process Model, page 5). While broad enough for manufacturing processes, they apply just as well to R&D, sales, engineering, logistics, accounting, customer service, healthcare delivery, financial services, government — any business process.

Use the following as a checklist for business improvements. Lean To Achieve Flow.

A. Macro Business Features — *Customer and Business Objectives*

This is the external view, from *outside* the organization, emphasizing overall attributes that contribute to agile, accurate, efficient responsiveness to market demands. To effect changes in these features, work may also be required in sections B, C and D below.

1. **Customer/Supplier Partnership, Satisfaction and Loyalty.** Shared goals. Proactive relationship with frequent communication to coordinate efforts.

2. **Clear Output Requirements.** Firm customer/supplier agreements on required quality, quantity, timing, delivery, etc. Little chance of under-production failure or over-production waste. Three levels routinely checked or renegotiated:
    - Specifications — explicitly written in the order or contract
    - Expectations — traditional assumptions, no longer in writing
    - Delights or future requirements — value-adds not yet expressed

3. **High-Quality Products and Services.** Always meet or exceed customer expectations; 100% conformance to agreed customer requirements.

4. **Strategic Position in the Industry.** Meaningful strategies exist that differentiate the business relative to the competition. Strategy execution is well thought through and executed with appropriate support systems.

5. **Evolving Products and Services.** Dependable success when new products or services are offered to the market. Cross-functional development teams work toward the objectives of Lean Product and Process Design (LPPD).

6. **Production Flexibility.** Able to quickly adjust the production process or schedule to meet changing customer demands and market conditions. "Mass customization" is the ultimate vision.

7. **Minimum-Cost Production.** Minimum in-process wastes of unnecessary (non-value) work steps, waiting, movement, rework, equipment, facilities, etc.

8. **Minimal WIP and FG Inventories.** Single-unit batch sizes whenever possible to minimize finished goods inventories, work-center material queues, raw materials stores, "In" box queues in email boxes, etc. This is a good visual indicator of a "lean" process. Conversely, the existence of significant WIP or FG inventory in any process indicates that it has not been designed for quick change-overs, small lot sizes and the other features of Lean Flow operations. However, until that is achieved (many details to be worked; effort, time), inventory levels must be set rationally, managing the demonstrated variations of demands and supplies.

B. Core Value-Add Business Processes — *Where the Value is Created or Added.*

Inside any business process — *Plant or Office*. To maximize business performance leadership must have a deep understanding of process capability and shun 'work-arounds' as band-aid fixes. The following attributes contribute to efficient operations, consistent quality outputs, low inventories, and short flow-through times. They are listed in rough order from easy-change work practices to complex overall process changes sometimes involving high-cost fixed assets or IT systems.

1. **Smoothed Production. Schedule Linearity.** Consistent workloads, minimal variation from schedule to schedule, day to day, hour to hour.

2. **Balanced Workloads and Crew Assignment.** No overloaded work-stations. No under-loaded stations. Everyone has a reasonable workload. Productive.

3. **Team-Based Dynamic Balancing.** Everyone shifts as needed, on-the-fly to make use of their slack times and relieve team-mates temporarily experiencing overload conditions. Maximum overall productivity. May need explicit Standard Work procedures (see Std. Work in section C) to coordinate such practices.

4. **"Pull" Methods, Kanbans.** Downstream operators signal upstream operators for just-in-time production and/or deliveries. Few needs for off-line control mechanisms or computer links.

5. **Organized "5S" Workplace**. "5S" **=** Sort, Set In Order (w/ Safety), Shine, Standardize, Sustain**.** A specific place for everything, always reached easily, no wasteful search time (for information, materials, data, IT applications, tools…). No unused equipment in area. Active "5S" program.

6. **Quick Tools and Fixtures.** Easy, obvious, at hand, ergonomic, dependable.

7. **Quick Setups and Change-Overs.** Little or no order-to-order change-over time to allow efficient small work batches, one unit or order at a time.

8. **Efficient Customer/Supplier Hand-Offs.** Partnership processes. Integration of customers and suppliers in establishing value-creation practices between organizations. Efficient in-house work-flow hand-offs.

9. **Error-Proofing, Prevention, Poke Yoke, SPC.** Nearly 100% defect-free, 6-sigma performance. Shared responsibility for QC and prevention; everyone involved, not just QA specialists. Error-proof methods and tools. Doing It Right The First Time (DIRTFT), and every time. No rework waste. Clear, consistent, well-disciplined procedures (see Standard Work in section C).

10. **Total Productive Maintenance (TPM).** Dependable computers, machines and equipment. Preventive maintenance (e.g. data-base house-keeping, forms updates, machine checks, etc.) integrated with routine work.

11. **All Process Steps "In Line."** In-line and cellular layouts. Close-coupled work-stations with very little work-in-process inventory in between. Materials and information storage "on line"; no double handlings in/out of remote storage.

12. **Minimum Moves, Handling and Transportation.** Short, few as possible.

13. **Process Synchronization.** Upstream operations started at right time to dovetail just-in-time with the downstream users. Process steps, workloads, and schedules coordinated so no one has idle (wait) waste time.

14. **"Autonomation," Jidoka.** Simple automation, without central complication.

C. Support Systems — *for Lean sustainability and Continuous Improvement (CI)*

Adequate Support Systems form a solid *foundation* for effective business processes. Although they are critical to sustaining improvements for any business process, they are typically underutilized by leadership teams.

1. **Standard Work Methods.** Well-documented standard methods and procedures. Simple graphics. Everyone is aware of the proven best methods and uses them as a matter of expected routine. Easy-to-use reference materials. Complete process documentation baseline (flow charts, work area layouts, process routings, sequence of events charts, change-over team sync charts, procedures sheets,…) for continuous improvement efforts.

2. **Organization, Involvement and Accountability.** Appropriate organization structure, right people recruited, fully trained, fully engaged in the operations. Structured, methodical processes for team-based collaboration; the practical nuts-and-bolts of true teamwork, not feel-good team fluff.

3. **Planning; LT, ST, Real-Time.** Management practices and systems that provide for practical order schedules, operating schedules, workloads, crew assignments, and support functions.

4. **Alignment of Daily Activities With Business Strategy**. Leadership sets strategically-aligned business improvement goals (for products, services and operations), and communicates them to all employees. Hoshin (Policy Deployment) Planning links organizational strategies to key improvement activities.

5. **Communications, Visual Signals.** Simple, direct signals. Quick, clear work-flow signals, and easy-to-interpret status boards for real-time work-team plans and corrective actions. Visual feedback mechanisms align daily work activities for best contributions to business goals.

6. **Measurement and Review.** Clear metrics track operating effectiveness versus the planned process outputs, key process steps to be managed up-stream, workplace orderliness ("5S"), and support systems effectiveness. This may be the most important Lean Flow process element, because it is true that "if we don't measure it, then we probably won't improve it."

7. **Recognition and Reward.** Appropriate consequences for good and bad performance versus the standards and special requirements.

8. **Continuous Improvement (CI). Kaizen.** Industry-leading Continuous Improvement business cultures routinely practice four CI sub-processes: Education (Ed), Measurement (Msmt), Search For Opportunities (SFO), Improvement Action (IA). They are imbedded in the operating and management processes and are the CI cultural norms (strong expectations) for "how we naturally do things here, every day." Employee development processes enable the workforce to make practical use of concepts, skills and tools from any source available (Lean, Six Sigma, Supply Chain, CRM, ERP, etc.).

9. **Leadership Practices for Lean Sigma CI.** Specific leadership roles, responsibilities and practices create an environment of trust and collaboration, where people are empowered to do their best work. Ethical behaviors are the norm. Coordinated, efficient Leaders' Standard Work tier meetings maintain a quick yet relaxed pace, and ensure plenty of time for personal work on CI projects.

D. Automated Information Systems — *Tools for Core Processes & Support Systems*

1. **IT Systems Performance.** Maintained at a high level of serviceability in line with the operating requirements of the core business processes and support systems using IT automation facilities.

2. **IT Systems Developments.** Keep pace with evolving needs for operational improvements and information handling efficiencies.

The diagram below is a frame of reference for the four sections of the Lean Flow Enterprise Elements above. Notice the A-B-C-D sequence, and use it as a reminder for any process improvement situation. It's especially important to not work on Support Systems issues (C and D) too early, because they often come up in initial root-cause analysis. However, a newly-streamlined core value-add process (B) may require much different Support Systems than originally envisioned, so too-early redesign work on them may be wasted.